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DISEASES OF THE NERVOUS SYSTEM

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

PUBLISHED MONTHLY for the PHYSICIAN in the GENERAL PRACTICE of MEDICINE

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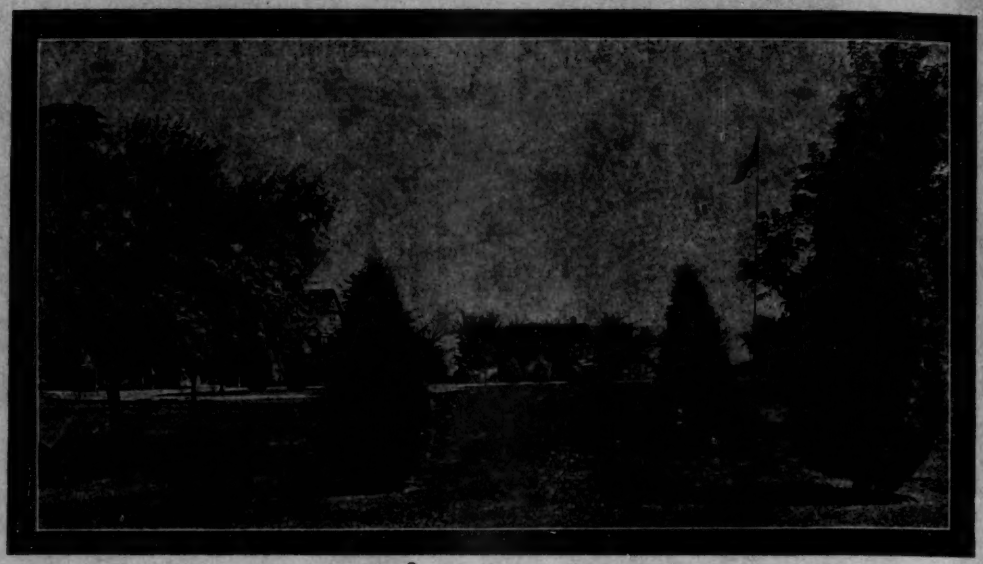

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DISEASES of the NERVOUS SYSTEM

(PUBLISHED MONTHLY)

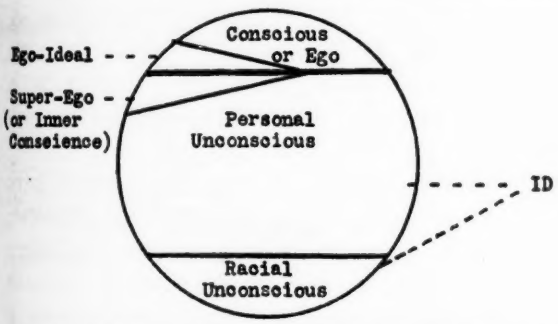
A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

EDITORIAL COMMENT

The Structure of the Mind

It will be of great help to general practitioners to know that, theoretically, the mind may be regarded as having structure. In fact, without due evaluation of the forces contained in such a structure, it cannot be readily understood why it is that persons with mental illness generally fail to overcome such illness without assistance, and why it is that treatment based essentially upon suggestion, advice and persuasion, generally fails to effect permanent improvement in mental symptoms.

In the following schematic presentation of the Structure of the Mind, that portion designated "Racial Unconscious" is the mind of the infant at time of birth, and the remaining portions represent mental developments after the child has arrived in the world.



1. *Racial Unconscious*—From the influences which have acted upon human beings for millions of years, we have accumulated mental properties which have been primarily advantageous to the preservation of the race, and incidentally to the individual, and which have become transmissible hereditarily. We commonly call these mental properties "Instincts". Archaic in origin their characteristics are found to be much the same in all children, at least in those who are not markedly defective in intelligence. From this standpoint, new-born infants are as much alike as peas in a pod, the relatively slight differences in individual stock not greatly affecting the quantity and qualities of the archaic instincts. The latter are primarily uncivilized, are powerful, and beginning with child training are gradually directed *more or less* into habitual channels which promote the relationship of individuals to one another in a civilized milieu. Theoretically, the instincts may be regarded as the ever productive source of all our energy. They remain deeply buried in the unconscious. We "feel" them, but never consciously remember their origins, as we do in the case of experiences occuring since birth.

2. *Personal Unconscious*—All of our life, we go through a process of forgetting, which involves most of the memory impressions of experiences had since birth. Various forces play a part in such forgetting. For example, through indifference the memory of an experience gradually fades out of ready conscious recall, if we fail to "keep it alive" through consciously thinking of it from time to time. Such forgetting does not imply completely losing such memories from the mind. Instead, such memories are buried deeper and deeper in the unconscious through the passage of time, during which we have been consciously involved with intervening experiences. Emotional forces, however, play a far more important role in forgetting. They are too intricate to permit of an attempt at full explanation here. It may be mentioned, how-

ever, that we generally tend to remember pleasant experiences and to forget unpleasant ones. When a situation is met that is particularly difficult and is at the same time painful, and a satisfying solution is not found, we may "push it out of our mind," as we say. Actually, we do not push it out of our mind, but push it down into the unconscious, or "repress" it. Such repressed memories of experiences constitute what may be called "unfinished emotional business," and remain unstraightened, unfinished, emotionally charged, very much as they were at the time of their repression; as long as they remain unconscious, they influence us from their position there. We call the forgotten memories of experiences had since birth the Personal Unconscious, to distinguish them from the Racial Unconscious.

In my opinion, the first six or eight years of life are the most important ones, because during those years, through moulding by experience, are laid the foundations upon which adult personality is built. From the standpoint of the child, such moulding of the foundations of personality make-up is accidental, for he is not yet old enough to discriminate and choose what he builds into his mind. With such consideration, it becomes apparent that various instabilities may be built into the very foundations of mental make-up.

3. *The Conscious*—The mind has been aptly compared to an iceberg, the small portion protruding above the surface of the water corresponding to the conscious mind, and the great bulk underneath the surface corresponding to the unconscious. While we are at any given time the product of our inheritance, plus the impressions of all our life's experiences in relation to our total environment, only a relatively small portion of the memories of our life's experiences is subject to ready recall into consciousness, for use in our daily thinking and our complex relationships to the world. We are no more capable of consciously knowing what is in our unconscious mind than we are able to see the iceberg underneath the surface of the water. Yet we are ever automatically influenced by past experiences, the memories of which are buried in the unconscious. It now becomes understandible that we may be influenced in our thinking and acting by instabilities built into the foundations of our mental make-up, and by "unfinished emotional business," without consciously being aware of the source or character of such influences.

4. *The Super-Ego*—This part of the structure of the mind is what we generally call our "inner conscience". With at most inadequate conscious reasoning, we "feel" that we must do this because it is proper, or avoid doing that because it is improper. The foundations of the super-ego, or inner conscience, are laid in the years of childhood through the attitudes of father, mother and other persons who represent ideals and whom the child imitates. From their apparent attitudes of what is good and bad, right and wrong, proper and improper, are built up the child's beliefs. We incorporate into ourselves what we *conceive* to be the attitudes of such persons, and our concepts, because of our youth and inexperience, may not accurately reflect the real thoughts of our elders about good and bad, et cetera. Whatever concepts of their attitudes we gain are buried in the unconscious along with the most of our memories of childhood, and thereafter our reacting to them is largely automatic and much as if we had incorporated our parents into our mind and as if they there told us "Don't do this," or "Do that". The super-ego may be lax, perhaps to the extent that we manifest little evidence of possessing a conscience. Or it may be so severe that we go through life in a narrow groove, fearful to an absurd degree that we are doing something wrong. A tyrannical super-ego, notwithstanding the commendable qualities it entails, may be a marked impediment to full capacity for efficiency and satisfactions.

5. *The Ego Ideal*—This is intimately a part of the Super-Ego, but is largely acquired later, from school teachers and others, and more on the basis of one's own choice. It is that part of the Super-Ego which is kept alive in consciousness, in connection with our conscious morals and ideals.

Each one of us has within himself powerful instincts, present from birth, and a bulk of unconscious memories of experiences which constantly influence him from the unconscious. One may have much "unfinished emotional business" within his unconscious, which

(Continued to page 317)

Psychiatry in General Practice*

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Dr. Slight received his medical training at the University of Edinburgh, in 1922. He was then Lecturer in Psychology at the University and Assistant Physician in the Royal Mental Hospital at Edinburgh. Following further hospital service, Dr. Slight came to McGill University as Clinical Professor in Psychiatry and Psychiatrist-in-Chief of the Royal Victoria Hospital. Four years ago, Dr. Slight came to the University of Chicago as Professor of Psychiatry. He has written various papers on physiological, social and clinical aspects of psychiatry. He is a member of the American Psychiatric Association, the Central Neuropsychiatric Society, the Association for Research in Mental and Nervous Disease and many others. Dr. Slight is also president of the Illinois Society for Mental Hygiene.

Problems of mind and conduct are now securing an increasing attention on all sides and in all aspects of life. It is now coming to be recognized that psychiatry is not confined to practice in mental hospitals, but is concerned with the whole field of emotional and personality disorders. Psychiatry has developed greatly as a medical specialty; but equally striking, has been the development of interest in disorders of mind and conduct by various non-medical groups concerned with the field of human relations. Indeed, it seems at times as if the medical profession in general has not developed an equal degree of interest and concern in regard to many of these disorders. This may be due to the fact that medicine has been pre-occupied with the remarkable advances in diagnosis and treatment achieved by physical methods in relation to organic disease that have come in recent times. Perhaps it has been taken too much for granted that such techniques and methods were sufficient for all the problems confronting medicine. In any case, we seem to have forgotten what was recognized more clearly in the past, namely, that man is not merely the sum of individual organs and body functions, but rather a functional unit living in a social environment and thus subject to continued reaction and adjustment of functions and capacities in terms of factors we shall briefly call emotional.

In view of the increasing general interest in disorders of the personality and the activities of the non-medical groups mentioned, the place of the physician in the field should be reviewed. Conservative reckonings estimate that thirty per cent of all persons seeking medical advice are suffering from functional disorders. This is a great challenge to the physician in general practice. The outcome is difficult to foretell, and it may well be that medical attitudes and practice are due for extensive changes, if the physician is to continue to hold his place in the field. Psychiatry is a specialty, but problems of mind and conduct are more widespread than any other form of disorder and thus must concern all physicians. However, it is fair to say that many medical men have less knowledge and familiarity with these disorders, than with most other branches of medicine.

The Field of Psychiatry

In a brief review of the field we shall pass from the disorders popularly regarded as being essentially of medical concern to those in which the non-medical groups are more interested, and where the division of right and responsibility between medical and non-medical disciplines is less clear.

(1) *The Psychoses*—This term refers to the disorders of mind and conduct that are of such severity as to require institutional care, or special supervision. Their frequency is indeed great since it has been estimated that 5 per cent of the population will be committed as insane during their life time and that another 5 per cent will be affected to a similar degree, as far as ability to work is concerned, although they will not actually be committed. The general practitioner is usually concerned only with recognizing these disorders as psychotic and placing the patients under institutional or special care. One such disorder, however, will concern every practitioner: the so-called toxic-confusional psychosis, a condition liable to occur as a complication in any and every branch of medicine. Study of a few such cases should serve to familiarize any physician with the general problems of all psychoses, not only as to symptoms and processes, but also as

* Graduate Conferences for Physicians, April 19, 1939, at the Herman Kiefer Hospital, Detroit. Meeting arranged through cooperation of the Michigan Society for Mental Hygiene, Inc.

to the general principles of treatment involved. Thus, this type of disorder forms a link of special importance between psychiatry and general medicine, since most of the indications for treatment are those of general medical therapy, apart from the special needs relating to excitement, violence and the like.

(2) *Mental Deficiency*—The problems of this group are fairly simple in general practice, that is, from the diagnostic standpoint. In the more serious cases of mental defect the necessity for institutional care is obvious, and in the higher grades the diagnosis will become obvious when the child enters school, if it has not been made before. As to the frequency of mental defect, it has been estimated that over 6,000,000 of the population have an Intelligence Quotient under 70, and it may be recalled that as I. Q. values fall below 70, it is more likely that institutional care will be necessary. It is to be hoped for that every general practitioner has at least a working knowledge of what the I. Q. means. In the higher grades of mental defect, the chief problems, such as the need for special instruction and later for vocational training and placement, concern the educator. But mental defecting at the adult level, at least, will assumedly constitute a greater problem for the practitioners, as the tempo of life accelerates and tends to increase the frequency of behavior problems amongst them.

(3) *Emotional Factor in All Disease* — It should go without saying there is an emotional factor in all disease. The tendency to speak of this as a "psychiatric" aspect may well be taken as an index of the relative neglect of the individual, when the physician concerned calls on the psychiatrist without further effort on his part to clarify this aspect and its therapeutic implications.

(4) *The Neuroses* — These disorders have been estimated to constitute at least thirty per cent of the whole practice of medicine. We may arbitrarily divide them into:

(a) A relatively small group in which the complaint is made in frank "mental" terms, such as fear, obsessions and the like.

(b) A much larger group in which the symptoms are of a "physical" nature, passing under a variety of names; sometimes general, as "nervous strain"; often under terms indicating the system to which the symptoms refer, as gastric and cardiac neuroses; and even more often under terms that reflect the common bias of physician and patient alike to have the disorder recognized as of purely "physical" origin. The proportion of neuroses diagnosed and treated as such is indeed small. It is doubtful if a like percentage of evasions occurs in any other type of disorder.

The reasons for this are many, some of which relate to the aversion of public and profession alike to acknowledge emotional and personality disorders. Medical and surgical measures are too often applied in terms of the presenting symptoms, without evaluation of the latter in relation to the disordered individual as a whole. One aspect of modern life may in part explain this, namely, the change in the relationship between family physician and patient. It is unfortunate that we hear and see less of the physician who used to have the family under his charge from birth onwards, the physician who knew the constitutions and family circumstances and had an established contact with the individual as a human being, over and above the state of his organs. Understanding and treatment of the individual in general practice is often less certain now than in the past, since a time factor is involved in gathering the knowledge that enables one to take adequate account of personal factors in the routine of general practice. Also, patients are more sophisticated nowadays in ways that may not be to their best advantage as, for example, when they come to the physician with preformed ideas and desires for treatment of alleged sinus, gall-bladder, allergic or other supposed causes of their ills, based on their reading and contacts with others. These explanations are "ordinary" and face-saving and forestall enquiry into personal and emotional factors.

(5) *Behavior Problems in Children*—Many of these disorders present the same problems and considerations that have been discussed under the heading of the neuroses. In this field the non-medical groups are most active, and it seems more and more likely that many such disorders will pass into the hands of social worker, educator, consulting psychologist and the like.

(6) *Personality Problems* — These form a heterogeneous group that cannot always be

formulated in terms of ordinary medical categories. In this group we have failures or maladjustments in vocation, sex, marital life or social relations. The non-medical disciplines have been active in this field and it is often claimed that the medical profession is no more qualified than they are to treat or give advice in such problems. Actually, many of these conditions are truly neuroses or other established clinical conditions. Nevertheless, medicine has a distinct challenge to meet here, well reflected in the statement so often heard: "There is no use in seeing a medical doctor for this; he is only interested in operations and drugs." We may also mention the rapidly growing demand for advice on matters of personality, vocation, family adjustment, marriage and other problems of living, sought for in the hope of forestalling the possible development of disorder and difficulty in the future.

Some Considerations as to Psychiatry in General Practice

This topic may be considered under two headings:

(1) The possibilities and limitations in general practice of investigating and treating emotional and personality factors as determined by considerations of time and the training and interest of the physician.

(2) The attitudes of patient and physician to personality investigation and to treatment of a psychiatric nature.

In regard to the first, the investigation is liable to be so time-consuming that the prospect appears expensive to the patient, or unremunerative to the physician. Thus, an operation is often paid for more willingly than many hours spent in personality investigation and psychotherapy. The patient with a neurosis may feel it worth while to undertake expensive therapy by physical or other measures in the hope of gaining quick relief rather than engage in psychotherapy which may involve continued effort and little prospect of immediate relief. This only goes to show that we have not yet reached the rational stage of development on which we pride ourselves, and maybe are more influenced by the irrational than we would like to acknowledge.

As to the second, we have already covered part of what might be said. Everyone resents an invasion of the Ivory Tower and it is easier to sacrifice an appendix than an aspiration, allow the exploration of a sinus than a symbol, or suffer the removal of a tooth than a temptation. Here we have a most interesting problem, the social stigma that attaches to any acknowledgment of a disorder as "mental", and this is the crux of the difficulty in the development of psychiatry, either in general practice or out of it. In psychiatry we are beset by difficulties that do not affect those branches of medicine that involve less personal factors, less in the way of self-revelation and abnegation. In addition, psychiatry is generally regarded as a most difficult field and thus one in which the general practitioner feels insecure. But, for the purposes of general practice, it is only necessary to acquire a knowledge of the principles of psychiatry, on a common-sense and practical basis, to ensure that the physician can fulfill his obligations in diagnosis and therapy. In any event, psychiatric disorders are first seen in general practice, that is, in the early stages when there are possibilities of prevention or of simple remediable treatment. Preventive medicine and mental hygiene are empty terms unless and insofar as the general practitioner is sufficiently informed to observe and prescribe for the early stages of disorder.

The Psychiatric Examination

This heading may be disconcerting to those who interpret the term "psychiatric" as implying psychosis or insanity. Actually, the elucidation and assessment of the degree of disorder present in the psychotic patient should present little difficulty. What is involved are the simple techniques of fact-finding, common to all disciplines concerned with human relations, namely, enquiry, observation, and the obtaining of information from others. We may well remember that when there is any question as to commitment, mental responsibility, or the like, these matters are assessed by a lay jury. Presumably, the average medical man might well be expected to have equal abilities; and in addition, he has had professional training in the field of human relations.

The most common condition wherein the

medical man has to make a "psychiatric" examination is in the minor disorders, the neuroses and personality problems. The usual schemes of examination, as given in psychiatric text-books, may at first sight seem of great complexity, and if followed mechanically are not helpful for the purposes of general practice. However, the physician need not be unduly disturbed, and he is ill-justified in echoing the often heard statement that a psychiatric investigation is too complicated for the ordinary medical man. If we apply ourselves to a consideration of the principles involved, we shall find that such schemes are only elaborations of very simple matters which we shall review.

(1) Such examinations involve no more than the techniques of the general medical examination. They are fact-finding and based on observation and enquiry.

(2) The method of such fact-findings is the interview, the basis of all clinical study, and of all other fields of personality investigation.

(3) The only feature that distinguishes the "psychiatric" interview is the special emphasis of enquiry on what the patient thinks, feels and does or wants to do.

(4) We endeavor to determine how the processes of impression and expression or, in other words, the functioning of the individual as a whole has been disturbed.

Difficulties may arise for some physicians whose training and interests have been predominantly concerned with organic functions and the presence of local physical disorders. They are, therefore, oblivious, or at least less conscious than they might be of those aspects of health that represent the activities and reactions of the individual as a whole, living in a social environment and subject to stresses and strains, emotional and social, as well as to inorganic or organic agents, chemical, toxic, bacterial and the like.

The Nature of Psychiatric Problems

Many physicians have difficulty in acquiring a minimum knowledge of the nature of these disorders, the reasons for which are many and would merit separate and special consideration. Psychiatric literature and terminology may seem difficult, but terminology, theories of the various schools and conceptions of the specialist need not hinder anyone from acquiring a working knowledge of the subject for the purposes of general practice.

The Psychoses

In the "organic" psychoses, the causal factors are those of organic disease in general, toxin, trauma, tumor and trophic, and the indications for treatment are chiefly those of general medicine. The only therapeutic needs calling for special consideration relate to the disorders of conduct involved, such as violence, excitement, neglect of self and the like. These are more or less the same in all psychoses.

In the so-called functional psychoses, the schizophrenic and manic depressive, and this applies also to the larger proportion of the neuroses, a difficulty that besets so many physicians is acceptance of the fact that emotional conflict can produce the vast variety of dysfunctions that it does. In general conversation we all recognize the far-reaching effects of emotion, yet so often we seem reluctant in medical practice to acknowledge the effect of such factors in the production of disorder and dysfunction. In so doing we are overlooking the general principle that normality or health is a balance of energies, between the processes of excitation and drive on the one hand, and the capacities for discharge and expression on the other.

The Neuroses

In the neuroses, as in the functional psychoses, there are three main factors to be considered:

(1) The constitutional basis and characteristics.

(2) The ways in which training and experience have operated to influence the personality development.

(3) The present social and reality situations confronting the patient.

In our evaluation of causes, we have to face the ever challenging question as to how far the disorder is the consequence of:

(a) The external and social factors, or

(b) The personality factors of the individual concerned.

It may be that some neuroses occur in fairly well-balanced personalities when the external stresses and strains have been of an

overwhelming nature. However, in most cases, we cannot but recognize the interplay of the two factors, the external or social on the one hand and the personal "vulnerabilities" on the other. We can thus make a series as we pass from those in which the personality "vulnerability" is minor and the larger factor is social, to those in which the external factors are of relatively mild degree and wherein the disorder is essentially due to a personality defect. In relation to prognosis and treatment, it is likely that in the former group a relatively small adjustment of the personality may effect a cure. In the latter, either much social change is necessary, or a need for thorough-going alterations of the personality, that is, for intensive or radical psychotherapy. Thus, as to the methods of psychotherapy indicated, the former group is more likely to respond to superficial methods, like suggestion and reassurance, while in the second group there is greater need for methods that will lead to a readjustment of life values and standards.

The Problem of Diagnosis

As to diagnosis in general practice, we shall consider only the general principles involved:

Psychoses.

(a) In the patient who has already shown marked signs of mental and conduct disorder, the question of further diagnosis is overshadowed by the obvious and urgent necessity for placement under institutional care. As to the determination of the particular type of psychosis involved, this need not concern us greatly, for the answer may only be clear after prolonged observation and too often is an academic issue at this stage. However, an endeavor to achieve a general diagnosis of the nature of the case should be made and this calls only for a general medical training. The chief question is whether or not organic factors are present that appear of causal significance and seem likely to respond to forms of treatment that can be applied in general practice or can be obtained in a general hospital, as when there is a suspicion of brain tumor, or when the patient appears to have a toxic-confusional psychosis. Apart from such obvious indications for general medical or surgical treatment, it is questionable as to how much time should be wasted, and the term is used advisedly, in following up this or that theory as to possible organic factors, for such considerations are difficult to assess and there are false and unwarranted claims as to the truth of many theories and the efficacy of various therapies in the psychoses.

(b) In the so-called borderland or early stages of the psychoses, the problem of diagnosis is more difficult. In spite of pious hopes and claims as to what should be done in general practice, perhaps we should more honestly face the fact that diagnosis in the early stages is too often a difficult problem even for the specialist. The obligations of general practice are well met when the physician suspected the onset of a psychotic reaction and has attempted to secure specialized help in the matter. As to the signs that justify one in suspecting a psychosis, we might well devote a separate study. Even in the absence of specialized psychiatric knowledge, many such cases are "suspected" in terms of general observation and intuition, but too often action is not pursued to verify the impression until the disorder is only too obvious. The time to recognize the so-called early or borderland case is when the signs are vague and intangible. Otherwise, the case is no longer "early" or "borderline," and thus so often it is found that the alleged borderland state is already a well-established psychosis.

Neuroses.

We may divide this group into two main classes as previously stated.

(a) Those who complain essentially of "mental" difficulties, such as phobias, obsessions and the like. Here, the primary problems are relatively simple: first, determining that the disorder is no more than a neurosis; and second, determining the degree of upset and discovering how far it is dependent on external factors, remediable by social adjustment, or by symptomatic and bolstering treatment, physical and mental, which will help the patient to meet his problems; or, on the other hand, in determining how far the essential factor lies in the personality make-up of the individual, thus calling for a readjustment of his emotional values and reactions. It is

more important to consider diagnosis in terms of such dynamic considerations than in terms of applying this or that title to the condition, as if each such label implied specific forms of treatment.

(b) The second group presents the most common and difficult problems of diagnosis in the neuroses, that is, the group in which the symptoms and complaints are of a "physical" nature. Here we are concerned with the problem of differentiating neurosis from organic disease and we shall touch on some of the general principles that may be helpful.

There is a common tendency to diagnose neurosis solely by exclusion of the signs of organic disease, but this procedure is to be deprecated. It is only reasonable to suggest that a further step is required, namely, that the diagnosis of neurosis be made on considerations that indicate neurosis in a positive way. To do this thoroughly would mean tracing and connecting the symptoms to the causal emotional factors and, ideally, in justifying the diagnosis by "cure" through adjustment of those factors. This is an ideal not always to be achieved in the hurried work of general practice. However, some simple considerations may be applied in the diagnostic procedure.

(1) As a rough and ready measure, we may apply a simple therapeutic test, such as giving a sedative and watching for the alleviation or disappearance of the symptoms. We may even verify the results with a control test, withholding the sedative to see if the symptoms return and again giving it to see if further alleviation occurs.

(2) Again, we may judge from the history as to whether or not an alleviation or disappearance of the symptoms occurred while the patient was on vacation, or during periods when some definite change was made in the social situation.

(3) We may engage in the further experiment of arranging indicated alterations in the life of the patient, or in the attitudes of his friends to see whether or not these will produce alleviation of the symptoms. Again, we have an easy means of control by once more reviving the now suspect emotional and social stresses.

(4) The multiplicity of symptoms, or their shifting from system to system, may in itself be sufficient to justify the diagnosis of neurosis by comparison with the usual form and course of dysfunction in the organic diseases that call for exclusion.

(5) There is the nature of the symptoms themselves and the possibility that they could not occur in organic disease. As an illustration, and unfortunately not always so clear cut, we may cite the glove or stocking anaesthesia in hysteria.

These are only a few criteria and none are absolute, but taken together they will often carry us a long way towards establishing a condition as a neurosis and not an organic disease. However, there are several possibilities we can never overlook, and we will here recall some of the possible relations between neurosis and organic disease.

(1) The symptoms may be entirely due to neurosis.

(2) A neurosis may exist with a coincident organic disorder, the two having no relation.

(3) Both conditions may be present and the neurosis may be an accentuating factor in symptoms due primarily to an organic disorder.

(4) Neurosis may develop as a reaction to the knowledge of organic disorder and to the changes in habits and capacities that result, as in various forms of cardiac disorder. The patient may thus be more handicapped from the results of the neurosis than from the physical effects of the organic disorder itself.

Treatment

It may be claimed that we have emphasized the neuroses as being of emotional origin and have failed to take account of possible "organic" factors. Some claim that all neuroses are due to "organic" factors and recommend only drug or other physical measures. I cannot hope in this short space to thrash out the pro's and con's of this argument. Much of our medical training and thinking would have it that all disorders are "organic," and certainly the general populace would have it so. The fact that "recovery" appears to follow various measures of "organic" therapy should give food for thought as to whether these measures are really effective in terms of their pharmacological or physiological properties, or rather in terms of suggestion and the psychotherapeutic ef-

ficiency with which they are applied. Let us not overlook the reassuring and helpful advice so frequently thrown in which the physician himself might discount were he reminded of it. Many physicians are better psychotherapists than they know or pretend to be, and many patients benefit accordingly and in spite of the operative or physical therapy applied. Indeed, there is much need for the physician to resist the high pressure claims made in evanescent printed blurbs as to the supposed efficacy of various drugs and other measures and to be guided more by common sense and practical experience.

One aspect of treatment calls for special comment, the time factor involved in the adequate investigation and psychotherapeutic treatment of many of these disorders, and particularly of the neuroses. This is often time consuming, if it is to be adequate, so much so as to seem unprofitable in many cases, according to the present standards of the practice of medicine and the expectations of the general run of patients. As a rule, the latter seek quick cures, preferably with a minimum expenditure of time and personal effort. This may be "human," but tends toward a search for answers that could only be magical were they possible, and hence we have in part an explanation of the overemphasis on physical measures that may seem to promise rapid and easy cure. That treatment should be paid for in terms of the time and effort involved in psychotherapy—and this applies also to other time consuming efforts of the internist—has not yet been recognized as a reasonable consideration by most patients.

Methods of treatment can be resolved into some simple general indications, insofar as general practice is concerned.

The Psychoses

The chief problem in general practice is the recognition of the degree of disorder and the following disposal to an appropriate institution, since most frank psychoses require the facilities of institutional care. There are possible exceptions, as in the aged, but little need be said of these beyond the ordinary considerations of medical practice in general. However, there are two forms of psychotic reaction that do call for special comment.

(1) The toxic-confusional conditions, as stated, are complications that may occur in the course of many diseases. The principles of treatment are essentially those of the underlying causal condition, so often forgotten in the event of the dramatic and overshadowing psychiatric complications. As to psychiatric aspects, two considerations should be emphasized:

(a) The necessity for continued supervision, not only of life and limb, but also of the ordinary body needs and functions, by planned and careful attention to all functions and habits, an attention to detail equal if not surpassing that given to any acute medical or surgical condition. The outcome depends in large part on the nursing care so provided.

(b) The second consideration, so often overlooked, and that will be met provided the nursing regime is adequate, is that the severity of disturbance is often less dependent on the causal condition than on the acquired dysfunctions that result from excitement, anorexia, and neglect of the body functions. Rectification of the latter will more often than not determine a sure start on the road to recovery.

(2) The other group is composed of the so-called "borderland" patients. We speak much of them and of the responsibility of the general practitioner for their recognition and early treatment, but, unfortunately, many are retained under treatment in general practice when the need for specialized care is as great, if not greater, than in any established psychosis. Unless the general practitioner is prepared to have an interest and knowledge approximating that of the specialist, it would seem wise that he refer many such patients to the specialist, even more speedily than he sends the frank and established psychotics. The relatives may object, as they no doubt will, but if there is to be more than lip service to the necessity for early treatment, early action is certainly indicated in securing specialized help and institutional care which alone can provide the necessary possibilities for treatment in most cases.

The Neuroses

Under *diagnosis,* we have indicated the general principles which determine how far and in what ways appropriate treatment can

be applied in general practice. As has been stated, only a small proportion of the neuroses are diagnosed and treated as such. Whatever may be our bias as to the "organic" basis of these disorders, there is little justification for ignoring the emotional and personality aspects that so often are obvious to others less prejudiced by "organic" considerations. Symptomatic treatment should certainly be applied to meet all remediable dysfunctions by careful attention to such details as sleep, rest, diet and the like. Whatever measures of physical therapy are applied, whether in relation to the presumed causal factors, or to secure symptomatic relief, nothing will be lost by efforts at simple psychotherapy, or social adjustment of whatever emotional factors are prominent. We need not detail the methods of psychotherapy. Those that may be helpful had best be practiced in simple fashion, without the inhibiting effect of appearing to demand special and technical procedures, which the physician may be ill-qualified to utilize. The only necessity is that the physician have a sense of human values and a capacity to deal with his fellows on a human basis. The less "psychiatric" the better, if this term is to carry an implication of the obviously technical or the specialized. It is worth remarking on an attitude not uncommon, that of apparent self-consciousness and tendency to apology when psychotherapy is to be applied. The same physicians will apply measures of a "physical" nature, considering them to be "legitimate" or "scientific," yet knowing full well—if they think it over—that these can only be effective on a psychotherapeutic basis. This is an interesting reflection on the nature of present medical training and practice and denotes an attitude that seems to call for rectification. The same tendency denounced hypnosis as a legitimate method of therapy in a past generation, so that it disappeared for a time from the therapeutic armamentarium.

Another aspect of the treatment of neurosis calling for comment is the common tendency to apply physical methods of therapy directed to the presenting physical symptoms, presumably on the assumption that the latter are of causal significance. We hear much of the occasional patient in whom a diagnosis of neurosis was made and who later developed organic disease. Criticisms ensue that are often unjustified for there is no reason why a patient with neurosis cannot develop an organic disease like any other person. However, if there are sins of omission, so are there sins of commission, and the latter are less often brought to book. An operative procedure, or a course of therapy indicated for organic disease is not infrequently applied in the neuroses on the grounds, more or less consciously recognized, that it may at least have a good "mental" effect. We may well ask how long the effect will last. Furthermore, if there is a possibility of such relief we may well suggest frank psychotherapy as such, rather than the use of methods that are not so different from those used by nonmedical groups which we call by unpleasant names. The position of the psychiatrist is indeed difficult when a patient finally comes to him after having run the gamut of claims as to organic factors and has been submitted to a variety of operative or other procedures all based on the supposed "organic" causes of his disorder. The psychiatrist must then raise the question as to whether or not the disorder is due to emotional factors. The difficulties that ensue go without saying and might well form the basis of more thought than they receive from physicians in general.

If symptomatic treatment and superficial forms of psychotherapy are not effective, the question of calling on the psychiatrist may arise. Much of the success or failure of what ensues will depend on the way in which the need for psychiatric help has been presented to the patient. Too often he is made to feel that he is going to the psychiatrist as a last resort, and he reacts with all the resentment that mankind shows when his mental status is questioned. The psychiatrist might well plead for a different attitude on the part of many referring physicians, so that within the limits of the peculiar prejudices generally attaching to these disorders, the patient would come to the psychiatrist in more or less the same cooperative spirit, that he comes to other specialists. Furthermore, as to specialized forms of psychotherapy such as psychoanalysis, it is to be regretted that the physician is not always as well informed as he might be, and is too often biased by uniformed, popular and false conceptions of

what such methods have to offer and how they operate.

Behavior Problems in Children

As to the behavior problems of children, much of what has been said regarding the neuroses applies here also. All who have had experience with this group, know too well that treatment is more often than not indicated for the parent as well as for the child.

Personality Problems

The people with problems who come in increasing numbers for advice and guidance on a variety of personality, sexual, vocational and other problems previously mentioned, present medicine with many difficulties. The extraordinary development of activity in non-medical fields raises the question of how far such patients have had short shrift in the past at the hands of physicians and have come to feel, rightly or wrongly, that the physician is unable or unwilling to meet their needs. The question is a serious one for medicine, since we see so many patients going elsewhere who might conceivably have obtained the help required within the realm of medical practice.

Conclusion

I have attempted to cover a large field and realize only too clearly the gaps in the presentation. Briefly, psychiatry in general practice involves little beyond the capacities and training of the average medical man than the application of common sense, plus a willingness to regard patients as human beings, a necessity to free himself from any undue bias that all disease is necessarily "organic," and a willingness to recognize the powerful and far reaching effects of the emotions in the production of symptoms and disorders. The latter we all claim to recognize, but, unfortunately, more freely in the club than in the clinic where so often we appear to discard or deny such considerations.

The other aspect of psychiatry in general practice that needs little emphasis is that the outcome of the mental health problem lies largely in the hands of the general practitioner, provided he is willing to help in breaking down the prejudices we have spoken of and to develop a whole-hearted interest in the field. Then he will be able to convey, and have his patients accept, the fact that emotional and personality disorder is an ordinary form of illness, like other illnesses, and is to be regarded as a legitimate and ordinary concern of general medical practice.

Clinical Manifestations of Allergy as they Affect the Central Nervous System*

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The recognition of allergy as a factor in producing certain neurological and psychiatric syndromes has lagged even behind the rather late development of our ideas of allergy affecting other systems. The importance and extent of neuropsychiatric syndromes having their bases in allergy are yet to be evaluated. Knox,[1] writing on the pathogenesis of encephalitis occurring with vaccination, variola and measles, states that in the use of the term "allergy" a biochemical reaction produced in the body from invasion of a foreign agent which leads to a specific immunity or hypersensitivity to the foreign agent is implied, but he recognizes that immunity and hypersensitivity may be different phenomena and purposely avoids stating whether the biochemical reaction occurs in

* Read at the annual meeting of the Texas Neurological Society, May 8, 1939.

the blood plasma, the fluid of the tissue spaces, or between one of these and the blood or tissue cells. He calls attention to the conception that the cellular changes seen microscopically are considered secondary to the antigen-antibody reaction.

In the limited space available, this communication will deal with the better known allergic reactions, omitting the discussion of the biochemical reaction patterns, although the possible mechanical relationship of the reacting tissues in the central nervous system will be mentioned. The principal syndromes to be considered are migraine; serum sickness with myelo-radiculitis; acute and subacute encephalomyelitis and possible multiple sclerosis; and some cases of epilepsy. The occasional cases of retrobulbar neuritis and cases with some psychic manifestations of allergy will not be included in this discussion.

The most frequently encountered condition recognized as being largely of allergic character is migraine. Migraine attacks are notoriously precipitated in a large proportion of patients by directly traceable contact with allergens. Emotional tension and physical or mental fatigue, or almost any source of distinct toxemia or debilitating physical condition will make such patients much more easily susceptible to the attacks of headache. A corresponding increase in susceptibility to acute episodes in patients whose allergy expresses itself in ways other than in migrainous attacks under sources of increased emotional tension is well known. In patients having migraine, a carefully taken family history will usually uncover recognized allergic symptoms in other members of the same family. Goltman,[2] reviews the theories of the etiology of migraine from 1849, and points out that these several theories do not explain all of the manifestations. In his case, the pathologic physiology is suggestive of an allergic etiology and the allergy studies correlate nicely with such a conception of the process.

The physiological changes occurring in the acute attack of migraine seem well demonstrated by the studies of Goltman and of Graham and Wolff.[3] There is a decrease in volume of the cranial contents which may correlate with vasomotor spasm for twenty-four hours preceding the onset of the acute attack. This is evidenced by pallor of the face and skin of the head, and depression of the craniotomy opening in Goltman's case. About coincidentally with the beginning of the headache there is apparently an increase in the volume of the intracranial contents, with dilatation of the cerebral vessels, as observed by actual exploratory operation during the time of an acute migrainous headache in Goltman's case, by subsequent observation of the bulging at the bone defect in Goltman's case in subsequent acute attacks, and by the pronounced vasodilatation of the branches of the external carotid artery in the acute attacks as observed by Graham and Wolff. It should be noted that branches of the external carotid artery supply the dura mater. Actual increase of pressure within the temporal artery by forcible injection of saline solution into the artery at a time when the peripheral portion of the artery was being compressed greatly increased the pain in the cases of Graham and Wolff. Anesthetization of the temporal and occipital arteries reduced this pain greatly, or abolished it altogether in the acute migrainous attacks.

In accordance with these conceptions of the mechanism of the migraine attack, the methods of the compression of the external carotid, separate compression of the temporal and of the occipital arteries, and novocain injection around the temporal and occipital arteries on the side of the headache were tried in one of my patients with intractable migraine, in whom the attacks occurred too frequently to permit the use of ergotamine tartrate in all of the attacks. This patient was relieved to a large extent by the elimination of food and inhalant allergens, but on occasions she disregarded her dietary and other restrictions, and under such circumstances acute attacks sometimes occurred each few days. Observations in this patient demonstrated a fifty per cent relief of the pain which she was experiencing in the early part of one of the acute attacks and a limitation of the total severity of pain in that attack to about twenty per cent of the degree of severity in the usual severe headache, as estimated by the patient when novocain injections were given. Even further relief was experienced by compression of the maxillary artery following novocain injection of the temporal artery and of the occipital

artery. Compression of the maxillary artery seemed to relieve the point of pain referred to the external portion of the orbit on that side, and to the upper portion of the maxillary region and to some extent in the region of the middle of the brow, just above the orbit. Simultaneous compression of the temporal and of the maxillary arteries gave approximately complete relief of the pain in this area and relieved the sense of pressure within the skull also. On another occasion, satisfactory although not complete relief of the acute exacerbation was obtained by novocain injection about the temporal and occipital arteries in this patient, and she was surprisingly free of the acute attacks for a period of one month following that. There had been no change in her routine in that month of freedom from attacks.

A second allergic syndrome is that of serum sickness. The generalized reaction and the cutaneous reaction need no description. In a small percentage of patients showing serum reaction, the central nervous system or the peripheral nerves are peculiarly affected. It appears to make no particular difference what type of serum has been used, nor at what site injection has been made. The neurological manifestations occur coincidentally with the cutaneous and general symptoms of reaction in most cases, and usually consist of a radiculitis, transient or permanent cord changes, or peripheral nerve affections. There is motor palsy, oftentimes some sensory change of a type dependent upon the location of the lesion, and ultimately complete recovery, or moderate to severe permanent changes dependent upon the location and severity of the initial lesion. The permanent results may be in the form of peripheral neuritis, neuritis of one of the larger plexuses, particularly the brachial plexus, or a diffuse myelo-radiculitis. Kraus and Chaney,[4] state, in discussing serum disease of the nervous system: "the underlying pathological process seems to be a primary involvement of the blood vessels, such as occurs in the ordinary type of serum disease." This statement refers to the etiology of many minor manifestations of serum sickness, such as headache, nausea, vomiting and neuralgia, as well as the more serious and disturbing forms.

The standard treatment of the acute phases of serum sickness with involvement of the nervous system consists of dehydration by the use of magnesium sulphate orally and by rectum, use of dextrose or sucrose intravenously, repeated spinal drainage for the purpose of reducing the intra-cranial and intra-spinal pressure and thereby reducing the tendency to collapse of the vessels supplying the central nervous system and the meninges. The simultaneous restriction of fluids by mouth is usually recommended, but if the other methods of dehydration mentioned are used vigorously, instead of the limitation of fluid intake, the results seem equally gratifying. In my experience, caffein sodium benzoate in fairly large doses hypodermically is a valuable adjuvant.

Two fairly typical examples of peripheral neuritis secondary to serum reaction may be referred to briefly in passing. The patient was a male, age forty-two, and had been severely ill with type two lobar pneumonia. He was given type one and two combined serum immediately, in a dose of 20,000 units, and on the following day a total of between 120,000 and 140,000 units of type two serum was given in divided doses over a period of ten to fourteen hours. Six days after the last of the serum was given there were diffuse joint pains lasting three days, and a secondary recurrence of joint pains in one wrist several days later. No focal weakness was noted until he first got out of bed, twenty-four days after the onset of the illness. There was dragging of the lower limbs, extreme fatigue of the muscles, upon even the slightest use, and great diminution of the patellar reflexes. At the time of my examination, a little more than five weeks after the administration of the serum, there was a fairly typical diffuse motor weakness, affecting both upper and both lower limbs, with diminution of tendon reflex activity. There were no changes either in the gnostic or vital sensory components. Treatment by hydrotherapy, massage, graduated exercises, and the daily administration of thiamin chloride constituted the program of treatment. Four weeks after the institution of this program of treatment he had walked a distance of three miles just before reporting to my office. At that time, there was still a marked depression of the achilles tendon reflex on the right side, but

the other tendon reflexes were approximately normal, and there was marked improvement in the objective motor power of all four limbs.

Another type of reaction is illustrated by the following case. A man, twenty-nine years of age, after taking a moderate amount of alcohol, received an accidental blow to his chin, and was knocked unconscious. There was a deep gash on his chin and abrasions on the arm. He remained unconscious for about ten minutes, was pulseless at the time, as attested by physicians who were at the scene, but apparently regained consciousness ten minutes later. The following morning he had an amnesia for a period of twelve hours. Three days after the accident he had been given prophylactic tetanus antitoxin. Four days after the administration of the tetanus antitoxin he developed urticaria at the site of the injection, generalized malaise, and six or seven days after the injection a severe headache, and pain in the temporomandibular joint occurred. Sixty grains of aspirin during a period of twelve hours failed to relieve the headache. The headache spread from the mid-frontal region to the occiput and suboccipital region. The blood pressure, which had been in the neighborhood of 120 systolic for many years climbed to 180 mm. of mercury. The blood pressure dropped to 150/96 on the administration of small doses of adrenalin, and the headache simultaneously improved.

On neurological examination, there was a slight depression of the tendon reflexes of the right upper limb, and a tendency to slight increase of the reflexes of the left lower limb with a positive Rossolimo on the left side. The optic nerveheads were a little indistinct in outline and there was slight venous engorgement in the fundus of the left eye. The pulse rate was 102, the blood pressure in the prone position 182/118. The symptoms gradually subsided over a period of three days, and the patient has been in good health since that time, a period of a little more than a year.

A third group of cases, the etiology of which is still controversial, have features which are strongly suggestive of an allergic etiology. Such cases are those of acute and subacute encephalomyelitis without direct infection of the central nervous system, and quite possibly a certain percentage of cases of multiple sclerosis. Foster Kennedy and Andus Frantz[5] call attention to the close resemblance of cases of acute multiple sclerosis, "The plaques, as seen at the rare autopsies in cases of the acute forms, are not sclerotic; they are areas of the nerve tissue surrounding blood vessels which are infiltrated with fluid. What the agent may be that makes the coats of these vessels permeable to serum is not yet known, but the morbid process is suggestively similar to those I have had under consideration." It may be that the sclerotic changes that occur in multiple sclerosis later are secondary to long continued or repeated pressure from such areas of edema, but this is not proved from the pathological standpoint.

Cases in this category should include those with specific bacterial sensitization. The patient exhibiting focal neurological signs in the presence of recognized serious infection at a distant focus, without demonstrable infection of the central nervous system, is all too familiar.

One of my patients, a boy seventeen years of age, had noticed a mild deep-seated pain in the calf muscles of each leg, beginning about five weeks before the time of my observation. Simultaneously with the onset there was a slight motor weakness and some difficulty in maintaining the balance. There had been a diffuse pyodermia for several months preceding the onset. The pyodermia evidently had followed a skin eruption due to ivy poisoning. At the time of examination there was complete loss of tendon reflex activity in all four limbs, extreme ataxia in movements of the lower limbs, slight motor weakness in the lower limbs and almost complete loss of gnostic sensations in the lower limbs. The patient had a temperature of 100.6 degrees, and there was a typical pyodermia, the infective agent being staphylococcus. It was feared that cord abscess or extradural abscess might be present, but spinal fluid examination was negative and the Queckenstedt test was entirely normal. The patient was treated with bacteriophage, and one month later the motor power was essentially normal, the ataxia was barely perceptible, and the gnostic sensory changes were

much less pronounced, although they still were present in considerable degree. The tendon reflexes were entirely lost at that time. Two and one half months after the first examination the gnostic sensations were almost entirely normal, and the motor power was normal, but there still was grave impairment of tendon reflex activity. There was no impairment of station and gait at that time. The boy had returned to his work on his father's farm three months after the beginning of treatment, and although he was not observed after that time, a letter from his parents ten months after my first examination stated that he was entirely asymptomatic.

Another group of patients are those epileptics, in whom there is undoubtedly a direct relationship between contact with allergens and the occurrence of epileptic seizures. I have seen several instances of what I believe to be a very clear relationship of this sort, and Beauchemin[6] has reported the finding of an allergic tendency in nearly all epileptic patients with psychosis. Detailed case reports cannot be given in the limited space available, but suffice it to say that the correlation of known gastro-intestinal or other symptoms characteristically of allergic origin, positive skin tests, and consistent epilpetic attacks after taking certain foodstuffs illustrate the point very well. For example, here is the experience of one patient, a girl of eighteen years with a history of typical generalized clonic convulsions beginning two years previously. These attacks occurred so characteristically after the patient had attended a football or baseball game or a dance, all of these occasions corresponding with the eating of sandwiches, drinking of soft drinks, etc., that a direct relationship was suggested. Skin tests showed a large group of food allergens, and we attempted to eliminate these offenders. The girl's vivacity was such that it was extremely difficult to persuade her to guard against dietary indiscretions. The frequency of the attacks was lessened by the use of phenobarbital, later by dilantin and general hygienic measures. Finally, the girl recognized an apparent direct relationship between the eating of chocolate, (one of her allergens), and her illness. Her own experience convinced her more effectively than we had been able to do. One day she ate chocolate and within an hour had a severe gastro-intestinal upset, headache, obstruction of the nasal passages, and the aura of an attack or possibly a mild actual convulsion. The general sense of malaise continued for two days. Two weeks later she again tried chocolate with the same result, except that in addition to the other symptoms she fainted on three occasions within a short time of a visit to the dentist's office. The psychic effect of the fainting which she regarded as a contemptible form of weakness in herself, and which had never occurred as a result of any pain in the past probably was the deciding factor in persuading this patient to adhere to the restrictions from the standpoint of the allergens. There have been no epileptic attacks, and no aura since that time.

Another example which might be included either under the heading of migraine equivalent, or of epileptic equivalent should be mentioned. The patient, a woman forty-two years of age had a sudden attack of weakness of the left hand occurring at a time when she was fatigued after entertaining guests in her home, and after about one week of persistent headache located principally in the region posterior to the right orbit and deep in the posterior part of the frontal and anterior part of the parietal region on the left side. There was sudden subjective sense of weakness in the acute attack, probably with numbness and tingling of the left hand and numbness along the ramus of the mandible, principally on the left side, with loss of speech. There was no loss of consciousness, and the patient had her wits about her sufficiently to write instructions to her servant, who called her husband and a physician. The attack passed away almost immediately after that, but another brief transient attack of similar character lasting a few seconds occurred shortly thereafter, and a third attack ten minutes later. The following morning she had a recurrence of the sense of numbness and weakness of the jaw, but the hand was unaffected. Objective neurological examination four days after the acute attack showed no focal weakness, no defects of sensation or of coordination, but a moderate generalized increase of tendon reflex activity. The peripheral visual fields showed a moderate con-

traction of the lower nasal quadrant of the peripheral field of the left eye, but this was believed to be secondary to an old injury of the left eye.

In eliciting the history, it was found that the patient had a recognized sensitivity to quinine, and that reactions after eating strawberries, walnuts, oranges, pork, and probably one or two other foods were highly suggestive of allergy. Skin tests demonstrated nine strong reactors in common foods. Her regime remained essentially unchanged for the first few weeks after the studies were done, and the patient experienced several additional attacks of similar character, but less severe in degree. Following the elimination of the offending foods all of her symptoms disappeared, and they have not returned up to the present time, a period of five months.

To summarize, therefore, attention has been called to a group of allergic manifestations affecting the central and peripheral nervous system, consisting principally of migraine, serum sickness with myeloradiculitis or peripheral neuritis, acute and subacute encephalomyelitis and epilepsy or epileptic equivalents. These conditions were discussed and illustrated. The recognized allergic syndrome producing certain types of retrobulbar neuritis was mentioned but not discussed. Attention was called to certain psychic manifestations, or exacerbations of minor or major psychoses in association with exacerbations of allergy, but discussion of these conditions has been reserved for a future communication.

Without attempting to promulgate a biochemical explanation for the allergic syndromes, attention is called to the importance and severity of physiological changes which may occur in association with circulatory disturbances secondary to allergic reactions. These manifestations, which are clear-cut in some instances, are apparently of transient character in most cases, but a prolongation of the disturbances of normal function resulting in permanent changes in the central nervous system may easily be visualized, particularly in the instances of myelo-radiculitis or encephalomyelitis. We may surmise, perhaps without demonstrable pathological proof from the postmortem table, that more permanent physiological changes in the form of a lowered threshold for attacks of epilepsy, migraine, or their equivalents may be produced by the repeated toxic effects of allergic flare-ups in susceptible persons. It is hoped that this communication may direct attention to the importance of allergic manifestations, and stimulate interest in the investigation of the mechanism of such syndromes, as well as interest in the more suitable methods of control.

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Psychiatric Criminological Treatment Procedures*

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Dr. Selling received his M. D. degree in 1928. Before this, however, he received degrees in Psychology and Physiology and was on active service in both these fields. Following the completion of his medical school course, Dr. Selling spent several years as Interne and Resident in Psychiatry at the Psychopathic Department of Bellevue Hospital. Since that time, he has taught at several universities, held special lectureships, done research psychiatry, and actively practiced psychiatry. In 1935, he became Assistant Director of the Psychopathic Clinic of the Recorder's Court, Detroit, Michigan; and, in 1936, Director of the Clinic, which position he now holds, along with the position of Adjunct Attending Neuropsychiatrist, Harpers Hospital; and Associate Attending Neuropsychiatrist and Chief of Neurological Division, Eloise Hospital. Dr. Selling is a Ph.D., Columbia University; M.S.P.H. and Dr. P.H., University of Michigan. His professional organizations are too numerous to list—32. They include membership in the societies of five foreign countries and Fellowship in the American College of Physicians and the American Psychiatric Association. Again, space does not permit us to list Dr. Selling's contributions to medical literature. Suffice it to say that there have been more than fifty in the last ten years.

* Studies from the Psychopathic Clinic of the Recorders Court—Series C, No. 17.

In the United States, and I presume that the same situation holds true in other countries, it has been necessary to devise treatment procedures for criminals, rather than to continue with the punishment approach to the problem which has been the method in use for so many centuries.

The reason for preferring treatment to punishment lies in two factors: The first factor is the cost of imprisonment. It has been estimated that in the prisons of the United States the average expense of maintaining a convict is seldom less than $50 a month and in certain institutions there is a justifiable expense of $100 a month. It is true that the prison populations vary in the forty-eight states, as well as the criminological procedures. Nevertheless, more than half of the states have at least five thousand convicts incarcerated at all times in their state institutions and probably an equal number, or a greater number can be found in the local jails attached to large and small cities and towns. This expenditure of funds runs into hundreds of thousands of dollars in each state each year.

In my own state of Michigan, a state which has a population of about four and a half million people, the expenditure is almost two dollars per capita for the maintainance of prisons and for the parole system. This excludes the cost of police departments and courts, expenses which, of course, have nothing to do with the mode of treatment as they would, of course, continue to go on, although perhaps diminished in amount, even though the number of felons incarcerated might be small.

The second factor which makes for interest in treatment procedures is one which might be described as humanitarian. Its background lies in the fears of the population and its lack of security, two potent psychiatric factors which would have a tendency to lower the morale of the population, if crime control were to break down. It is, therefore, to the interest of any community to have its criminals properly cared for so that there will be a minimum of crimes committed against property and the population as a whole can feel safe to go about its business without fear of assault of one sort or another.

While these ideas are not as clearly cut in the minds of the public as they are in the minds of criminologists, nevertheless the American public, particularly that in the more enlightened parts of the United States, can easily see the need for treatment procedures rather than an indiscriminate filling of penal institutions. This, I believe, is in contra-distinction to the practices of some of the old world countries, where incarceration has been aggravated rather than diminished. I believe, too, that in South America the idea of treatment has not yet reached the stage it has in most states, although I know the diagnostic procedures in criminology in many lands south of us have been developed to a very high degree.

In the United States, police and court methods vary with the different communities. The basis of government in the United States is not that which has its head in Washington, where the "G" men and "T" men are, but, as far as criminology and the control of crime are concerned, is a many-headed hydra having forty-eight different little centers in the individual states. Because of the fact that most states contain but one large city, although there may be others which could not be considered as really small, the court procedures in the individual cities also differ. The laws are not uniform. For a well-known instance, some states have capital punishment, other states do not.

The court procedures and the set-up of the administration of justice, while resting entirely on the United States and state constitutions, vary in major considerations in the different cities. The particular type of court administration in which the writer is interested is that of the psychiatric clinic which is attached to the criminal court of a big city. Probably no more than five of our fifteen largest cities, all of which have approximately a million population or over, have such clinics. The set-up of these clinics, too, is different in the different cities. For instance, in New York City the clinic is a part of the Department of Hospitals which takes care of all of the psychopathic cases as well as the medical and surgical cases for the whole city of New York. In Chicago and in Detroit, the clinics are set up by the courts themselves, and they are under the direction of a medical man and are independent of

other court departments. In Pittsburgh there is a probation department and in this probation department certain individuals, medically and psychologically trained, are detailed to do the psychiatric criminology which is necessary—although in practice these individuals function as a unit quite free from the control of the probation department.

Although psychiatric criminology dates to Lombroso and other countrymen of his, who lived in the last century, the type of criminological psychiatry which is practiced today in the United States has become changed in very many major considerations. In 1907 in Chicago, after setting up ten years previously a court which would have jurisdiction over juveniles alone, it was found necessary to aid the judge in disposing of the cases of juveniles by the creation of a clinic to study the cases as individuals. It was realized that each offender was different from the others. While they may fall into many substantial groups, each one having its own qualities, nevertheless treatment of criminals and understanding their natures would be as diversified as the number of offenders themselves. To the criminologists previous to the present decade, this would seem to be somewhat bizarre. Certainly, if a man steals an article of little value, he should not be punished as much as if he committed a murder.

Yet with the introduction of the medical concept in criminology, it was readily understood that two pickpockets or two automobile thieves bore no more resemblance to each other than two cases of pneumonia. I'm sure that the medical men will agree that no set rule can be made about the treatment of a physical disease. Perhaps serum should be used in all cases of pneumonia, and yet we know that in some pneumonia cases serum is worthless.

In 1907, as indicated above, Healy, in this country, set up a clinic which was to be the forerunner of a large institution in Chicago now known as the Institute for Juvenile Research which had, seven years ago, when I was a member of its staff, a personnel of about ninety persons — psychologists, psychiatrists, social workers, sociologists, physicians, endocrinologists, psychoanalysts, clerks, recreation specialists, and others who worked together as a group in order to diagnose each case of delinquency and to propose an adequate and intelligent form of treatment for the individual case.

Treatment of the criminal in the United States at the present time can be divided analagously to medicine into three divisions. The first might be called the division of prevention of crime. This part has to do with two major spheres. These two spheres are sharply demarcated. One of them has nothing to do with the criminologist except insofar as his research indicates changes in the community as a whole. Problems of poverty which give rise to predatory crime, domestic maladjustment which may give rise to assaults against the person, corruption in the government which leads to embezzlement, all really fall outside the sphere of the psychiatrist, when one considers him as an expert in treating individual cases.

Nevertheless, when he finds that there is a major problem in the community, a social or an economic or other problem of a similar nature, it is his duty, we believe, to apprize those in authority of the need to make a change. He may be called in consultation, and members of our clinic have frequently been called in by members of the Michigan State government, to advise as to adequate methods of carrying out changes which, while affecting the population as a whole, have a particular bearing upon the crime problem.

The second sphere in which prevention is important is that of the study and treatment of juvenile delinquency. I am sure that it would be accepted by all of us as an axiom that when the attitudes and the types of conduct of a juvenile which may later lead to crime can be corrected, the adult crime situation has a tendency to improve. As a corollary, however, one must admit that there are a large number of mature first offenders who are also correctible. While the *anlagen* of the crimes to be committed in adulthood are undoubtedly laid in childhood, nevertheless, experiments of various sorts in American communities with recreation and other procedures which would tend to cut down delinquency have indicated that with the clearing up of juvenile delinquency the adult crime situation loses some of its potency.

I must remark here parenthetically that we in the New World probably have a somewhat

different problem than those who have been working in Europe. I know from communication with my colleagues in South America, Central America, Canada, and Australia that the raw communities in the western hemisphere have a greater tendency toward crime, not because of differences in government or differences in the hereditary background of the population, but because of the fact that pioneering is so recent in our country that there is still a reminant of the individualism which has been necessary in order to properly inhabit and develop the wildernesses which existed until seventy-five years ago in the United States, and in other countries on our hemisphere even until today.

To return to the preventive angle of our treatment of criminals in the United States, I should like quickly to discuss the various procedures which are in vogue. In some cities, notably New York and Chicago, clinics have been established to correct deviating individuals as early as they can be detected. In Chicago, this form of study and treatment projects as far into childhood as the pre-kindergarten child, and it is in keeping with the beliefs of many generations that this should be the case. The egocentric and irritable child of two or three years of age has a greater chance of becoming a problem than the one whose personality difficulty develops a bit later. Since the studies of treatment and analyses of personality and conduct of these pre-school children have been in existence for only a shade more than a decade, figures, of course, are not yet available which will indicate how many untreated children get into trouble who had personality and behavior problems in the pre-school years and were untreated and became criminals and how many, who were treated out of an equal number of like cases, went about their business without coming in conflict with the law.

The usual procedures in this country in dealing with the prevention of crime through clinical means are through either the Juvenile Court Clinic, as I mentioned about Chicago, or through the school clinics. These clinics are set up in a somewhat similar fashion and the only reason for one being attached to a school system and another to a juvenile court rather than having both served by the same clinic is a matter of administration in the particular community. Most big cities have clinics attached to both the courts and to the school system and there may be, as in Detroit, a separate, private clinic which is available for interesting cases which need more treatment and more diagnosis than would be available in a public establishment.

In general, the procedures in these clinics are similar. It is to be expected that such would be the case, since they have all arisen from this juvenile clinic established in the Chicago courts and their procedures have been aided and supervised by the National Committee for Mental Hygiene which was responsible for providing funds to found such clinics in cities of less than a million population. There are, of course, large areas in the country where no such clinical facilities are available. To some extent, these areas may not need them. It has been my observation that crime among widely distributed populations in states where the farmers are far apart and have gigantic farms is not a major problem. It is in our large cities that immediate need of a clinic is necessary and in the smaller cities it has been possible to supply clinical facilities perhaps once or twice a month by sending out units from organizations located in cities of the same state, having a population of a million or over.

Cases may be referred to clinics either in the large or small cities from almost any source. Parents who are having trouble with their children may bring them in; they make the complaint to the principal who refers them to the school clinic, or they may go to the juvenile court. Police take the children to the juvenile courts and the school teacher who has a problem child in her class may also make a reference to the school clinic. The social agencies, and in the United States the social agency is highly developed throughout the country, may refer cases to the appropriate child guidance clinic in the community or, in a few instances, may have child guidance clinics of their own.

The child guidance and preventive psychiatric procedure is more or less comparative in all these clinics, no matter to what agency they may be attached. The work is done by units rather than by individuals. When visiting France in 1937 and talking to psychiatrists from other countries, I was

struck by the fact that the psychiatrists or neurologists had to take care of the problems as individuals, relying only on other members of the clinic staff for advice which they were better able to give because of some technical training in a specialty. While it is true that in the United States the psychiatrist still remains the center of such a unit, it is my belief that the majority of properly trained psychiatrists, and we do now insist on many years of special training, are willing to direct special problems into hands which have more experience in the specific problem than their own.

In most clinics, it is true that the psychiatrist heads the unit, that his word is final, and this rests upon the fact that medical problems and the problems of mental disease which are best studied by him, are in his sphere. Nevertheless, the psychologist and social worker are increasing in importance. The psychologist makes special studies of the ability of the individual to progress in school, whether that individual has an organic reading difficulty or, perhaps, whether he has a major personality defect due to some type of psychological malfunction. The sociologist and social worker delve into the background of the child in order to get a clear picture of the various mechanisms at work, such as maternal overprotection, maternal rejection, or the Oedipus complex, which would aid in solving the difficulty.

Treatment in such cases is predicated entirely upon diagnosis. Usually the treatment of the juvenile reflects back into the home. The parents are treated and advised. Sometimes the children are taken from homes and placed in foster homes where the foster parents are likely to be more understanding than the real parents.

In dealing with adults we have a somewhat similar problem. Attached to both the courts and the prisons in the more advanced states are highly developed psychiatric clinics.[1,2,3] The purpose of the clinic in the court is to diversify treatment and to keep as many individuals safely in the community as possible. In our own clinic, for instance, we have developed techniques by which we can predict, in somewhat the same way that the actuary does in predicting life-span, whether an individual is likely to make good on probation.[4] This probation is a form of supervision carried out by a court officer who has the right to arrest and who has the training of the social worker; namely, goes to the home, advises the individual about his economic problem, secures work for him, even gets friends if necessary and stands in the position of a parent.

Since so many of our young offenders in the United States are such because of an emotional maladjustment due to a parental conflict, a stabilized, properly trained and intelligent probation officer, aided by a psychiatrist who has made a diagnosis with the help of his staff, is frequently able to take the father role and to keep the offender out of very much trouble in the future. In some cases, specific psychiatric treatment is necessary. This is particularly true of those cases where sex offenses such as rape, indecent exposure, and tampering with the private parts of a minor child, be it a girl or a boy, have been committed. We specifically make a thorough study of such individuals by psychological, psychiatric, and endocrine means and treat for the specific mental disorder which comes out of our examination.[5,6,7]

A third method of treatment is reference to a private physician to correct an endocrinological disorder or to give psychiatric treatment. This is available to the courts all through the country, although it must be admitted that they do not always take advantage of the fact that it is available.

The diagnostic units are similar in the adult clinic to those in the Child Guidance Clinic. Each individual is studied and the specific causes of the crime, as far as we are able to ascertain them, are the basis for treatment. We try to remove the cause first. If we cannot, then we give palliative treatments. Of course, one form of palliative treatment is to place the man on probation with the usual lecture about how to behave himself and to cooperate with the law. This is often greatly successful, even though it is of a sort of a random nature and the treatment is not directed to a particular cause of the crime.

Another form of treatment is that of incarceration. There are two kinds of individuals that we feel are adequately treated

by being penalized. One of them is the person who has guilt feelings and who, if he can be properly punished, will have his emotional conflicts resolved. As most psychiatrists are willing to recognize, there are a number of expiative mechanisms which lie behind many crimes, particularly those of a sexual nature or of offenses against the person. It may, perhaps, not be possible to psychoanalyze all cases going into prison, or going before a court, but it is possible even in a relatively short interview to secure a picture of the nature of the mechanisms which are causing the crime. A too deep mother attachment is very important in cases of crimes directed against the person. Rejection of the father seems to be very important in predatory crimes, and in this case the father is represented by the police or by, perhaps, society as a whole, which causes the individual to steal or commit similar offenses. A tendency to want to commit these crimes, as in the type of offense that we used to call kleptomania, is aggravated by not having the individual punished. Often, of course, this punishment can be carried out by a severe reaction on the part of a judge who acts as a father symbol.

More often, incarceration with thoroughgoing study, with advice, treatment and understanding surveillance is a very good procedure. But this punishment should not be done from a standpoint of revenge. Coupled with such punishment, must be placement in industry; that is, the person who is sent to prison must learn a trade; he must learn how to get along with people; he must develop an interest in his fellow-men and an understanding of the difference between *meum* and *tuum*.

In prisons, too, actuarial tables are being built up, from which it can be decided when a man should be allowed to return to the community, if at all. Last but not least, it might be an acceptable form of treatment, although the word is loosely used in this respect, to conceive of life imprisonment, at least incarceration for a long period of years, to keep the person out of circulation. We must admit that psychiatry and criminology are not yet omniscient; that there are individuals whom we cannot understand and cannot treat by discovering the causes of their offense and removing them; and that there are other individuals who, even though we know the causes of their misbehavior, cannot be approached because of some major pathological feature in their make-up. These people, then, must be kept incarcerated.

To summarize, I might say that in the United States, although the treatment procedures are diversified according to cities and states, there are three general means of handling the criminal. The first, a preventive method, is to keep the juvenile out of trouble by finding out the causes of his personality maladjustments and treating them. The second lies in studying the individual before he has committed such a severe crime that he can no longer be treated, and placing him in a community with an effective father substitute. The third is to resolve guilt feelings by incarceration and, if necessary, to segregate the individual permanently, or until he is cured.

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A New Test for the Diagnosis of Certain Headaches: The Cephalalgiogram*

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In a recent paper dealing with the mechanism of headache[1] a new diagnostic test which we have chosen to designate as a "Cephalalgiogram" was presented. Its value as an indicator for appropriate treatment of certain types of headache has been further observed.

The "Cephalalgiogram" is easily performed, but as the method involves additions and withdrawals of spinal fluid from the lumbar canal, strict aseptic technic must be observed.

The Procedure

The patient lies upon the side in an horizontal position on a level surface, such as a litter or operating table. The usual lumbar puncture posture, with knees flexed and lower back favorably arched is desirable. Sand-pillows are adjusted beneath the head so as to bring the neck and the sagittal sinus on the same plane as the spinal canal. The patient should be relaxed, breathing easily and with no obstruction to free circulation about the neck, chest or abdomen.

The skin in the lumbar area is carefully prepared with appropriate antiseptic solutions (either followed by 1% picric acid), (alcohol followed by 3½% Iodin). Lumbar puncture is then performed in the usual manner, using an 18 or 20 gauge needle. Appropriate amounts of local anesthesia should be used so as to avoid disturbing the patient, as holding the breath, straining, or any emotional display may alter abnormally the subsequent pressure and volume determinations.

The initial cerebrospinal fluid pressure is read from a mercury manometer, connected to the lumbar needle by means of a sterile rubber tubing and adaptor. A sterile 100 c.c. burette (carefully graduated) is filled with from 50 c.c. to 75 c.c. of sterile, physiological saline solution, at approximately 103° F.

Sterile tubing and a "T" connection or "two-way" stopcock joins the burette system to the manometer and the lumbar needle. A sterile screw clamp on the burette tubing is placed near its attachment to the manometer, so that the flow of saline solution can be regulated, as well as the burette system "cut off" during the time that pressure readings are being taken throughout the test. The operator should wear mask, gown and sterile gloves during the handling of these connections and the saline solution used.

With the connections open and the manometer in circuit, the operator may raise the burette to permit fluid to rapidly run into the spinal canal, watching the pressure being exerted on the internal and external fluid systems thus connected, as well as measuring the volume of fluid introduced. The burette can also be lowered to allow spinal fluid to flow rapidly out of the canal into the burette, while pressure and volume readings are being recorded.

When a patient is to be tested by this method, the operator rapidly alternates the procedure of introduction and withdrawal of fluid by raising and lowering the burette. The patient should be instructed to indicate the moment when "headache" begins during the addition of fluid. The amount of fluid introduced is then read off the burette and the pressure noted. These figures are charted on a graph.

The effects of the addition of further fluid into the spinal canal upon the headache,

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* Presented before the Section of Neurology and Psychiatry, 88th Session of the American Medical Association, June 10th, 1937, Atlantic City, N. J.

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its intensity and distribution, should be noted and the volume readings and pressures recorded. When the patient shows signs of intense pain, or when headache similar to that suffered spontaneously occurs, the total amount of fluid from the burette, required to produce this response is determined, the coincident pressure recorded and the procedure reversed. It is desirable to maintain an uniform positive pressure of about 20 mm. Hg. during the phase of fluid introduction.

The burette is then lowered, permitting fluid from the spinal canal to escape back into the burette.

A negative pressure of −6 mm. Hg. is desirable.

Withdrawal of fluid from the spinal canal should definitely relieve the induced headache and it is important to establish the "vanishing" point of symptoms in terms of pressure and volume. A period of complete or almost complete freedom from headache follows, as the fluid continues to flow into the burette. The patient usually indicates a definite point where he or she is "quite comfortable" and this level is noted on the burette (by sliding a rubber-band to the fluid level indicated). Computing this level with the original level of fluid in the burette gives the first index of plus or minus altered volumes within the craniovertebral system, which may, if abnormal, be associated with the mechanism of headache.

As fluid continues to flow out of the canal, the patient will sooner or later begin to again complain of headache. The negative displacement volume reading is again made upon the burette and the patient requested to describe the headache, its radiation and intensity. When the patient's reaction indicates intense pain, a final reading is made and the burette promptly raised. The "headache" is again relieved as fluid flows into the spinal canal. A point of "comparative comfort" is again reached, which is noted and compared with the former level established previously.

The fluid system is then allowed to come to an equilibrium in the "zone of comfort" with pressure readings approximating the original level.

The test should establish an *upper level* for "headache" (when too much fluid is introduced into the ventriculo-subarachnoid system) and a *lower* level for "headache" (when too much fluid has been withdrawn from this system through the spinal canal) as well as a *zone of "relative comfort"* or relief from headache. These *upper* and *lower* levels should be quickly checked by repeating the raising and lowering of the burette; final readings being made and compared with the first series. An attempt is made by the operator to have the patient select from this series of "headache" experiences, arising from the two extremes of fluid volume alterations (or some important interval) an experience similar to the one originally suffered, for which clinical relief is sought.

The graphs which are obtained from such a series of observations (Figure I) and which show the pressure and the volume of fluid displaced necessary to produce the symptoms of headache, constitute the "Cephalalgiogram."

It is important to note that these observations enhance the contention made elsewhere[1] that a "stretch" mechanism of the cerebral vascular tree is probably responsible for the sensation of headache.

With diminished cerebrospinal fluid volume, there is permitted an excessive hyperemia, with "stretch" of the large venous sinuses, certain of which carry pain fibers. Pain referred to the top of the head and back of the head may follow the venous anatomical pattern. Hyperemic stretch of the arterial component likewise occurs giving rise to a throbbing pain following the distribution of the anterior and middle cerebral arterial branches.

This "hyperemic type" of headache is seen chiefly in individuals who are underweight, who are victims of anxiety neurosis and in mental workers after prolonged concentration and study, as well as in those suffering from infection or trauma which may induce hyperemia in any portion of the carotid distribution.

With increase in cerebrospinal fluid volume, due to obstructive processes, tumors, meningitis, edema, simple hydration or defects in local and systemic elimination of fluids (renal deficiencies), over-accumulation of fluid places the ventriculo-subarachnoid system in a distended state and the vascular network becomes stretched over the arch of

the ventricles and by arachnoidal attachments to the surface arteries in the sulci. Ischemia is associated with this type of mechanical stretch, due to the increased fluid volume and consequent diminished blood volume (Monro Kellie doctrine). Reduction in the fluid volume within the ventriculo-subarachnoid spaces brings about relief of headache in this type, along with beneficial readjustment of blood volume relationships (ventricular tap, spinal drainage, purgation, sweating, dehydration).

It is important to note that abnormal measurable alterations in intracranial volume relationships may occur without significant changes in spinal pressure. This is indicated in the "Cephalalgiogram" procedure. Such is so frequently the case clinically that no correlation of pressure with the symptom of headache is possible. Where spinal pressure is increased, the corrective measures required are obvious, but where pressure is found to be "normal" confusion as to the cause is only too frequent, as past medical experience has shown.

In the last analysis, "pressure" only represents an *index* of the force arising between opposing volumes within a closed container. Clinical manifestations more closely follow abnormal volume shifts than alterations in pressure. Nature tends to maintain "normal" pressure relationships, if possible, by alteration in the volume components.

The "cephalalgiogram" as a test may indicate the direction in which the volume relationships have been unfavorably altered, as the range of displacement of fluid required to bring about the symptom of headache will, in suitable types, show a positive or negative alteration of volume.

From a clinical standpoint, there are at least two typical groups of patients suffering from "headache," and in whom are represented the extremes of cranio-vertebral fluid alterations. Between these two extremes lies a spectrum of variations of degree and intrinsic disturbances as yet undetermined.

The first or "hydration" type arises, for the most part, in the plump, well-nourished, slightly over-weight group of individuals who either consume excessive amounts of liquids and food, or whose portals of elimination through the kidneys, skin or bowels are sluggish or impaired.

In this group, "high tides" of fluid with storage, or inability to properly eliminate, tend to periodically produce the over-filling effect of excessive ventriculo-subarachnoid "stretch" of the arteriovascular network, with resultant "throbbing" headache, frontal or temporal in location. Collateral symptoms of mental hebetude, dullness, irritability, vomiting, etc., indicate excess of free or tissue-bound fluid within the cranio-vertebral cavity, irrespective of "normal" spinal fluid pressure findings.

Therapeutic measures directed toward elimination and reduction of body water weight, or direct relief of the intracranial obstructive processes are indicated.

The second, or "dehydration type" of headache arises for the most part, in the thin, under-weight individual, or in one suffering from some emaciating disease. Insufficient fluid retention in the body reservoirs, or direct loss from the cerebrospinal fluid reservoir, such as encountered in cerebrospinal fluid leak or following spinal fluid drainage, gives rise to the hyperemic phase of stretch which may involve the large venous sinuses of the dura as well as the arterial tree.

This variety of headache is usually localized at the top of the head, deep behind the eyes to the back of the head, and may range from a feeling of "pressure" to one of intense ache. When combined with the arterial factor, a throbbing character is added. It is commonly encountered in the neurotic group, the fatigue types and those who manifest an undue amount of elimination with failure to replace fluid loss to the cranio-vertebral reservoir.

Collateral symptoms are those of nervousness, excessive activity of mind and body, poor health and general under-average weight.

Therapeutically, forcing of fluids usually fails to bring retention of body fluids as indicated by a gain in the patient's weight ("one pint equals one pound"). If, however, the patient is placed upon high carbohydrates with small doses of insulin (5 units three times daily) along with rest and sedatives, rapid weight gain may ensue and relief of symptoms follows the expulsion of excess blood from the cranio-vertebral cavity, as

the "tide" in this particular reservoir rises, permitting more normal volume adjustments.

Since we have maintained careful records of liquid intake and output on our patients, watching changes in body weight (loss or retention of fluid) we have found many instances where either excessive liquid intake or definitely insufficient amounts of fluids have been responsible for the patients' suffering. Correction of these habits alone bring the much desired relief. Too often the patients' fluid intake habits are not investigated and the cause of common headache overlooked.

The procedure has shed considerable light upon the alterations of volume relationships which are possible within the cranio-vertebral cavity, as well as reciprocal tides of blood and fluid that may under certain conditions occur.

Headache as a symptom marks, in certain instances, the extremes of these "tidal" variations.

Two mild reactions have been noted so far with meningeal signs lasting twenty-four hours. No other untoward effects have followed the procedure.

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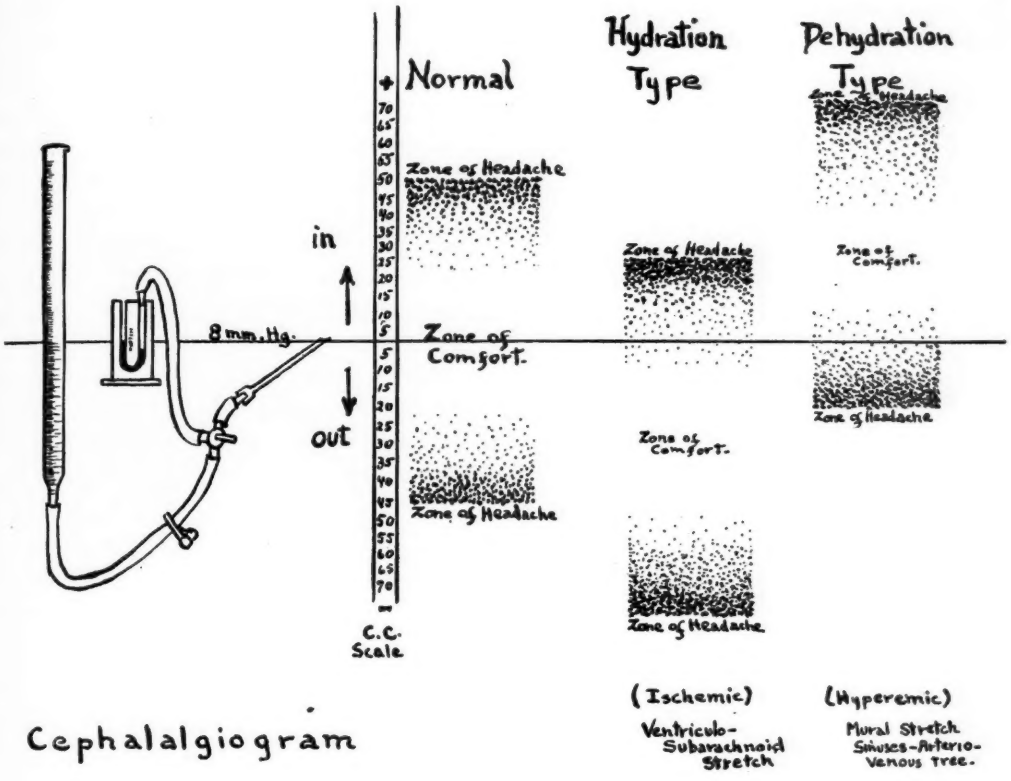

FIGURE I

Diagrammatic representation of the volume alterations of cerebro-spinal fluid and their relationship to stretch mechanisms associated with headache. Between the two extremes of high and low tides of fluid lies a zone of comfort.

The Rational Treatment of Manic-Depressive Reactions

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There have been numerous theories advanced as to the cause of manic-depressive psychoses, ranging from repressed aggression to some undetermined glandular imbalance. Recent research with the electroencephalograph[1,2] and metrazol shock therapy[3] justifies a reformulation of our concepts as to the physiopathology of this disorder.

It has been obvious, clinically, that manic-depressive reactions are due primarily to some alteration in the emotional stability of the individual. Thinking disorders, such as hallucinations, delusions, phobias or obsessions, should be considered secondary to and determined by the underlying affective disturbance.

Being primarily an emotional disorder, the pathology is probably centered in that part of the brain surrounding the third ventricle, i.e., the diencephalon, including the thalamus and hypothalamus. Neurophysiologists[4,5] and pathologists[6] have shown that destruction of the diencephalon results in apathy and emotional blunting, while stimulation produces symptoms of increased emotional excitement.[7,8] Clinically, it also would seem that the physiopathology resides in or near these centers because of the sleep, appetite, weight, metabolic, vasomotor and endocrine disturbances which form such an integral part of this disease. These are all functions which are known to be especially represented in the central autonomic ganglia of the nuclei of the hypothalamus[9].

Repeated examination of these cases with the electroencephalograph suggests that the specific pathology is an overactivity of the diencephalon[1]. Moderate emotion has been shown to strengthen the alpha waves of the brain while excessive emotion destroys them, probably due to a Wedensky type of blocking from overexcitation.[10,11,12] The majority of manic-depressive personalities show a consistently strong alpha brain rhythm indicative of a constant affective tone above normal and probably constitutionally determined. When one of these people becomes ill, the rhythm is very apt to decrease in intensity, suggesting in these cases excessive emotional excitement with cortical blocking. That strong emotion can temporarily block the cortex is evident to anyone who has committed foolish and unthinking acts in the "white heat of passion." Those manic-depressive cases showing destruction of the alpha rhythm usually have a return of this rhythm to its normal intensity on recovery from their illness.

Metrazol convulsive treatment of depressed cases is one of the most specific therapies in the whole field of psychiatry and an understanding of its action would be especially illuminating. Grinker[7] has shown that metrazol acts on the diencephalon and that its effect can be reproduced by electrical stimulation of the diencephalon. If metrazol stimulates the diencephalon, why should it be beneficial in this condition when the diencephalon is already overstimulated? This apparent paradox can best be explained by comparing the diencephalon with an electrical condensor that is accumulating a charge of electrical tension. After the tension builds up to a certain peak it will discharge across a spark gap, provided this is available, reducing the tension to zero. Clinical observation indicates that this explanation of the action of metrazol is a true one. After the convulsion, which is equivalent to the spark gap discharge, there is a let down of emotional and nervous tension, lasting for varying intervals until the tension builds up again, only to be released by another con-

vulsive treatment. Eventually the tension diminishes or wholly disappears and the curative process of subsiding diencephalic excitation is hastened. Cases treated too early in the illness are apt to relapse, perhaps because the neurophysiologic status of the diencephalon is such that a certain ripening of the illness has not occurred and tension again arises after cessation of the treatment. This also explains why subconvulsive doses of metrazol are so harmful, since they stimulate without affording the opportunity for release of tension through the convulsion.

Whether metrazol will be as efficacious in manic cases as in the depressed ones, has not been determined. Why diencephalic overactivity results in a manic attack at one time and a depression at another is also a mystery, but may be related to Pavlov's excitatory and inhibitory types of nervous activity.

If diencephalic overactivity is the cause of manic-depressive illnesses, then other accepted forms of treatment become rational. The administration of barbiturates, with their direct depressing effect on the diencephalon, should be considered specific therapy. The elimination of all possible emotional stimuli, responsibilities and obligations and placing of the patient in an emotionally neutral environment becomes an understandable necessity. Psychotherapy with reassurance as to recovery and discussion of psychogenic factors aid materially in reducing emotional tension. The rationale of treatment in manic-depressive cases, then, becomes a matter of promoting diencephalic rest and quiet in every way possible.

Summary and Conclusions

(1) A working hypothesis based on newer research methods and treatment is advanced to explain the physiopathology of manic-depressive psychoses. Overactivity of the emotional and autonomic centers of the diencephalon is considered to be the cause of these reactions.

(2) Treatment should be directed toward quieting the diencephalon by any method available. Reducing emotional stimuli, reduction of responsibilities and obligations, placing the patient in an emotionally neutral environment and psychotherapy are all indicated.

(3) Specific therapy consists of the use of barbiturates with their direct depressant effect on the diencephalon. The most potent of all the therapeutic agents, metrazol convulsive treatment, probably acts by discharging the diencephalic tension in a manner similar to the discharge of an electrical condenser across a spark gap. Each convulsion discharges the accumulated tension and promotes the diencephalic quietude which is the objective of treatment in manic-depressive cases.

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may adversely affect his good adaptations to the world and bring him unhappiness. He may be dominated by a tyrannical Super-Ego. The poor Conscious may have a very difficult time of it, between powerful forces from within and difficulties with Reality, i.e. the world, without.

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Case Notes in Extramural Psychiatry

Case I: Mental Deficiency in a Seven Year Old White Male.

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Complaint Problem: Mother states that patient does not talk enough for his age. He tends to repeat the same sentences and rarely uses new words. When asked to repeat a sentence he only says the last word of it. Mother does not want her child placed in a special class for the mentally retarded in the public schools, but wishes him to enter the regular grade class.

History of Present Problem: Patient came into the world a "blue baby". The doctor stated that he would not live two weeks after taking him home. Although there was difficulty in bringing about breathing at birth, he nursed at the breast for six months. There was rapid gain in weight so that at nine months he weighed 29 pounds. (Patient was full term, weight eight pounds, the younger of two children.)

He began walking at the age of one, but was very slow in getting his first tooth, over one year of age. Speech delay was the outstanding abnormality, there being no single word spoken until the age of five. At first these sounds were unrecognizable and characterized by repetition of single syllables with pointing. In the last two years there has been definite improvement so that at the present time he can speak sentences of two or three words.

Patient is able to assist in dressing himself, but can not tie his shoes or a cravat. No enuresis after the age of two. Prior to the age of two he was afraid of dogs, cats, rain, fire engines, and movies. Since this age he has gradually become desensitized toward these stimuli. He is inclined to be fussy about his food, registering strong likes for only certain things such as soup and meat.

There have been no convulsions. He wants his way all the time. Parents feel that they have babied him, but have shown no partiality with respect to his older brother.

Sleep is very good; appetite normal; weight satisfactory for age. Mother states he has recently been growing taller.

In play he tends to associate with those who are four or five years of age. At times he has temper spells. He understands directions and will act upon them for the most part, although he is unable vocally to respond.

Personal History: Personality is described as very shy, seldom talks to anyone except to members of the immediate family. He has a tendency to put his fingers in his mouth. A babied, spoiled child, who has temper spells if he does not have his own way.

Patient entered kindergarten at the age of six in September, 1938. At that time, the teacher was unsuccessful in getting him to talk. Later in the year there was definite improvement. This spring the mother stated he was rated for "passing" into the first grade this September. Recently, however, the mother stated that she received a letter from the school stating that the principal thought it best to place him in a special class for the mentally retarded. The mother is resentful toward this, stating that they perhaps do not wish to be bothered with him. Moreover, she is fearful that it will do her son no good to be associated with mentally deficient children regarding whom she has heard much that is not so.

Patient has good habits regarding sleep and excretory functions.

Past illnesses have included whooping cough, measles, and chicken pox. Tonsillectomy was done at the age of three.

Patient lives in an apartment with his father, mother, and a brother, age nine. He has a bed to himself.

Family History: Father, age 34, Italian, butcher, enjoys good health with the exception of colds in the winter. Mother, age 31, Italian, began to suffer asthmatic attacks soon after the birth of patient in 1932. This

was preceded by sinus trouble and head colds. It is interesting to note that since asthmatic attacks appeared there has been no sinus trouble. She is under treatment for this allergic disorder, certain elements of diet eliminated and desensitization inoculations being given. Brother, age nine, is in good health except for colds in the winter time. He is in the fourth grade, speech normal in development.

No history of nervous or mental disorders admitted in paternal or maternal lines.

Physical and Neurological Examination: A small-sized, poorly and somewhat asymmetrically developed pale white male. Height and weight within normal range. Head circumference only 18 inches (average 20 inches at age seven).

Cranial Nerves: Smell is normal. Pupils are equal, central and circular, and react to light and accommodation. He has worn glasses since the age of fifteen months because of astigmatism and twitching of the right eye. Glasses were changed a year ago. Vision is subjectively good; no gross defects in visual fields, fundi negative. Slight internal squint is present in right eye. IV and VI are negative; V negative. VII negative; VIII negative; IX, X, and XI negative. Speech is difficult to understand because of low intensity and lack of clarity of enunciation. He tends to overlap his lips so that his speech is dampened and blurred. On repetition, however, he is able to repeat single words clearly.

No muscular weakness, atrophy, or fibrillations; grips equal, gait normal, no tremors or ataxia. Muscle tone is good. There is no loss of sphincter control.

No loss of deep or superficial sensibilities; no asterognosis; no loss of sense of position or vibratory sense; no tenderness of spine muscles or nerves; no pain or hyperasthesis are present. Tendon reflexes are all active and equal. There is no clonus, no Hoffman. The Abdominals are active. Plantars flexor is noted. Thyroid gland is normal and there is no evidence of other endocrine pathology.

Mental Examination: His appearance is that of a well-dressed, bashful, but smiling Italian boy of seven years, who wears glasses. Stream of thought is connected, but there is no spontaneity. He appears happy, both subjectively and objectively considered. There are no abnormal trends. Sensorium is clear. Binet-Simon intelligence test shows: CA 7-4; MA 2 years six months; range, unable to do any of fourth year; I. Q. just below 40. He is able to name parts of the body correctly and to name familiar objects. He fails to repeat in toto certain sentences. He is unable to draw a square or count four pennies.

Diagnostic Formulation: A mentally defective Italian boy of imbecile level apparently of congenital origin. The fact that he was a blue baby with difficulty in resuscitation may have been a factor playing a role in mental retardation, but this is not a leading factor. The parents are of average intelligence. Patient is also handicapped by behavior problem difficulties owing to poor habits of emotional control in which some measure of emotional instability is associated with delay of mental development.

Prognosis: The mother and father were informed that their child would, in all probability, always remain a person of deficient intellectual development although improvement in certain skills and intellectual acquisition could be expected, but not at the normal rate. They should never entertain the hope of his becoming of normal intelligence although he could, with adequate training and supervision, become a happily adjusted child socially and occupationally on an unskilled labor level. Formal school achievement of the academic type should not be expected except in a very limited way with respect to the three R's.

Treatment: This patient is fortunate in living in a city where there is provided a special class for the mentally retarded, directed by a teacher with special qualifications in this branch of education. He is somewhat below the usual range of I. Q. (50-75) required for admission to such classes. The class is necessarily small and for this reason the patient will receive the best opportunity for individual instruction in keeping with his restricted intellectual assets. The major part of his time should be devoted to habit training in practical manual skills and a lesser time given over to the rudiments of numbers, word recognition, and speech training. The most important contribution of the school will be in furthering good habits of social adjustments so that he can learn to get along reasonably well with others. It is

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important that his sense of ego be developed and maintained on the level of interests and activities which success and achievement can obtain. The parents must be mindful that he be not compared to disadvantage with his older brother or with other children, as this would sour his personality make-up and bring about unnecessary inferiority and emotional complexes. The essential thing is to see that a 24-hour schedule of home, school, and community program will be set up, in which he will be known as a happy child. To this end, habit training in home chores can provide a medium whereby parental praise and commendation may be liberally employed in order to compensate for his inability to show off to good advantage in formal education achievement.

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